

In the claims:

1. (currently amended) A method of assigning sequence numbers to packets for transmission over a network comprising the steps of:

identifying a quality of service level associated with a packet, wherein the service level is selected from a set of at least two service levels available for packets in the network;

responsive to the quality of service level associated with the packet, assigning a sequence number to the packet, wherein the sequence number is related to a sequence number of a previously transmitted packet of the same quality of service level; and forwarding the packet over the network .

2. (currently amended) A method for determining whether to discard a received packet at a node the method including the steps of:

comparing a sequence number associated with the received packet against sequence numbers associated with a selected number of previously received packets, wherein the received packet has a quality of service level associated therewith, and wherein the selected number of previously received packets are of the same quality of service level as the received packet; and

discarding the received packet in the event of a match between any one of the sequence numbers associated with the selected number of previously received packets having the same quality of service level as the received packet and the sequence number associated with the received packet.

3. (currently amended) The method according to claim 2, further comprising ~~the step of~~ forwarding the received packet for processing in the event that there is no match between any one of the sequence numbers associated with the selected number of previously received packets having the same quality of service as the received packet and the sequence number of the received packet.

4. (currently amended) The method according to claim 2 further comprising ~~the step of~~ forwarding the received packet for processing in the event that the received packet is received a predetermined time after the selected number of previously received packets.

5. (currently amended) The method of claim 1, wherein the quality of service level is determined in response to a differentiated services codepoint (DSCP) associated with the packet.

6. (currently amended) The method of claim 1, wherein there are at least two quality of service levels and wherein the sequence number corresponding to a higher priority quality of service level is separate from the sequence number corresponding to a lower priority quality of service level.

7. (currently amended) The method according to claim 3, wherein at least one of the quality of service levels corresponds to an Expedited Forwarding (EP) per hop behavior.

8. (currently amended) The method according to claim 3, wherein at least one of the quality of service levels corresponds to an Assured Forwarding (AF) per hop behavior.

9. (currently amended) The method according to claim 3, wherein at least one of the quality of service levels corresponds to a Best Efforts (BE) per hop behavior.

10. (currently amended) An apparatus for assigning sequence numbers at the sending node of IPSec tunnel , comprising:

a sequence number table, each entry associated with a quality of service level and storing a number representing the last sequence number for that quality of service level; and

means for assigning a sequence number to a packet to be transmitted based on the quality of service level of the packet.

11. (currently amended) The method according to claim 10 wherein the means for assigning the sequence number operates to retrieve a last sequence number for that quality of service level from the sequence number table and increment the last sequence number to provide a new sequence number to assign to the packet.

12. (currently amended) The method of claim [[1]] 2, wherein the step of discarding the received packet in the event of a match is performed in accordance with an Internet Protocol Security (IPsec) anti-replay mechanism.

13. (currently amended) An apparatus for discarding redundant packets received at a receiving node, comprising:

a sequence number buffer, for storing sequence numbers associated with packets received at the receiving node, wherein a packet is assigned a sequence number responsive to a quality of service level of the packet and a sequence number of a prior packet having the quality of service level of the packet;

an anti-replay bitmask table, each entry associated with a different quality of service level and storing the bitmask of sequence numbers of previously received packets to be compared in determining whether to discard a received packet.

14. (currently amended) The apparatus of claim [[8]] 13, wherein one of the entries of the anti-replay bitmask table is associated with an Expedited Forwarding (EF) service level.

15. (currently amended) The apparatus of claim [[8]] 13, wherein one of the entries of the anti-replay bitmask table is associated with an Assured Forwarding (AF) service level.

16. (currently amended) The apparatus of claim [[8]] 13, wherein one of the entries of the anti-replay bitmask table is associated with a Best Effort (BE) service level.

17. (currently amended) The apparatus of claim [[8]] 13, wherein the apparatus operates according to an Internet Protocol Security (IPsec) protocol.

18. (currently amended) An apparatus comprising:

means for receiving a plurality packets having an associated plurality of sequence numbers, wherein each one of the packets in the plurality of packets has a [[a]] quality of service level associated therewith, and wherein there are at least two types of service levels;

means for comparing, for each received packet, a received sequence number of each received packet against a set of previously received sequence numbers, wherein the set of sequence numbers includes only sequence numbers of packets_{[[,]]} previously received within a window and having a quality of service level type corresponding to [[a]] the quality of service level type of the received packet.; and

means for discarding the received packet in the event of a match between the received sequence number and any of the sequence numbers in the set of sequence numbers.